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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,481	09/04/2003	Yosuke Fujii	TOW-041	8703
959 7590 01/26/2007 LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			EXAMINER HODGE, ROBERT W	
			ART UNIT	PAPER NUMBER
			1745	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/26/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/656,481	Applicant(s) FUJII ET AL.	
	Examiner Robert Hodge	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/18/06, 10/27/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see Remarks, filed 10/27/06, with respect to the objection to the drawings and the specification have been fully considered and are persuasive.

The objection of the drawings and the specification has been withdrawn.

Applicant's arguments filed 10/27/06 have been fully considered but they are not persuasive. Applicants state that the amendment to claim 1 with regards to indefiniteness has overcome the rejection under 35 U.S.C. 112, second paragraph. However the amendment has made that portion of the claim more confusing to the Examiner and further clarification will be made in the below rejection under 35 U.S.C. 112, second paragraph. With regards to the rejection under 35 U.S.C. 103(a) applicants state that neither reference teaches a seal member in contact with a gas diffusion layer. However applicants are directed to figures 10 and 11 of Inoue, where seal S1 contacts gas diffusion layer 24 and seal S2 contacts gas diffusion layer 26. Therefore the rejections will be maintained.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1 applicants recite, "a seal member

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interposed between said outer marginal region and said first metal separator, the seal member being in contact with said other gas diffusion layer". Said recitation is indefinite because the parts that applicants are referring to cannot come in contact with one another. As defined in the claim and compared to figure 1 of the instant application, there are two gas diffusion layers, wherein "a surface area of one of said gas diffusion layers [must be for the anode 38] being larger than a surface area of the other of said gas diffusion layers" (must be for the cathode 40). Therefore as defined in the claim there is one gas diffusion layer and the other gas diffusion layer, to alleviate confusion the one gas diffusion layer will be referred to as the Anode GDL and the other gas diffusion layer will be referred to as the Cathode GDL. Claim 1 continues to define that the Anode GDL has an outer marginal region extending outwardly from the outer region of the Cathode GDL. So therefore there is a seal member that is interposed between said outer marginal region (of the Anode GDL as defined in the claim) and said first metal separator (which must be separator 16), and the same seal member is in contact with the Cathode GDL. Therein lies the indefiniteness, how can the same seal member that is in contact with the Anode GDL be in contact with the Cathode GDL at the same time, they are on complete opposite sides of the membrane electrode assembly (MEA)? In order for a seal to contact both the Anode and Cathode GDLs, the seal must envelope the entire peripheral edge of the MEA which applicants do not have support for anywhere in their specification.

With regards to claim 5, it is unclear which surface of the separator applicants are referring to faces the electrolyte electrode assembly (EEA). It almost appears to the

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Examiner that the reactant flow fields are not contacting the EEA and therefore reactants would not be provided to the EEA rendering the fuel cell useless. However the Examiner is giving applicants the benefit of the doubt and as best understood by the Examiner applicants are reciting that the reactant flow fields (both fuel and oxidant) face the respective side of the EEA that the need to in order to provide reactants to the EEA. Therefore any prior art reference that teaches flow fields in contact with an EEA (or MEA which is the same) it will read on claim 5 as recited.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pre-Grant Publication No. 2001/0051294 hereinafter Inoue in view of U.S. Pre-Grant Publication No. 2002/0119358 hereinafter Rock.

Inoue teaches a fuel cell comprising an electrolyte electrode assembly (MEA) including a pair of electrodes with the electrolyte disposed there between, said electrodes having gas diffusion layers and electrode catalysts that face the electrolyte, wherein the surface area of one gas diffusion layer is larger than the other that also extends outwardly beyond the outer region of the other, first and second metal separators that contact the appropriate electrodes that sandwich the MEA with respective gas flow fields and a seal member interposed between the various layers to properly seal the MEA (abstract, figures 10 and 11, paragraphs [0009]-[0011], [0021], [0060]-[0062] and [0092]). With regards to claim 5, Inoue as seen in figure 2 also teaches that the reactant flow fields for the fuel and oxidant are in contact with the MEA in order to provide the MEA with reactants.

Inoue does not teach that the seal member includes a flow field wall, or that said flow fields are serpentine in nature or a partition seal.

Rock teaches a bipolar plate assembly with reactant gas flow fields for fuel cells wherein a seal member includes a flow field wall between the outer region of a gas diffusion layer and a separator flat surface, said reactant gas flow field is a serpentine flow passage having at least one turn region and partition seal is in contact with the electrolyte membrane and the reactant gas flow fields (abstract, paragraphs [0006]-[0011], [0027]-[0032], [0036], [0038]-[0040] and [0044]).

At the time of the invention it would have been obvious to a person having ordinary skill in the art to combine the teachings of the Inoue and Rock references in

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order to provide a more compact fuel cell stack that has superior sealing characteristics and utilizes fewer parts for the purpose of assembly.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RWH

GREGG CANTELMO  
PRIMARY EXAMINER

Handwritten signature of Gregg Cantelmo in black ink.

FOR P. RYAN